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NATIVE GRASSES RAIRIE LANDSCAPING

IN THE NORTHERN GREAT PLAINS



✧ **USDA, NRCS Plant Materials Center (PMC), Bismarck, ND**

- ✧ Lake Agassiz RC&D
- ✧ Cass County SCD
- ✧ Glacial Lake Agassiz Interbeach Project

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WHY PRAIRIE LANDSCAPING?

- ◆ Water is a precious resource in the Northern Great Plains, and water conservation is a high priority for expanding urban areas.
- ◆ Traditional lawns and landscaping methods may utilize fifty percent of annual residential water use.
- ◆ Water quality is jeopardized because of consistently high application rates of fertilizer and pesticides.
- ◆ Native grasses are adapted to the climatic extremes of this area and provide reduced maintenance and a traditional beauty that is becoming more desirable to many homeowners.

This brochure is intended to provide general information regarding establishment of native grasses and recommends varieties that are adapted for prairie landscaping in the Northern Great Plains.

Adapted varieties of native grasses that originated in the Northern Great Plains provide an alternative that will conserve water, reduce fertilizer and chemical use, and reduce the use of fossil fuels used in mowing and other turf maintenance. Once established, the native grasses provide an enduring landscape that promotes many environmental benefits, as well as reduced maintenance to the homeowner.

Kentucky bluegrass sod is generally regarded as requiring the highest level of maintenance for ground cover landscaping. High plant densities required for the "traditional turf" look need high amounts of water and fertilizer to keep the grass healthy and vigorous. Adding to the problem is the continual need for mowing. The more you water and fertilize, the more you need to mow. Many homeowners are reducing the size of their traditional lawns in favor of a reduced maintenance approach.

"More than 24 million acres of suburbia are planted in lawn. Each year \$7.5 billion are spent on the care of that lawn, including more than 67 million pounds of pesticides. In addition, the average lawn requires 10,000 gallons of water over the course of a summer to keep it that emerald green so many continue to covet."

Stevie Daniels, 1995, The Wild Lawn Handbook.

ORIGIN

The grass varieties described are intended for use primarily in North Dakota, South Dakota, and Minnesota. The establishment and maintenance techniques will have application in other regions, but varieties other than those listed may grow better. Native grasses generally perform best when planted no more than 300 miles north or 200 miles south of their origin. Planting east and west of their origin is influenced primarily by precipitation and elevation. An increase of 1,000 feet in elevation is equivalent to a move of about 175 miles north of its origin. When improved varieties of a species are not available, an alternative is to use seed or plants originating from native harvest in the Northern Great Plains.



lawn (photo by Ted Upgren)

OR COOL-SEASON?

s, such as buffalograss and blue
and begin growth later in the spring,
during the summer months, and then
in the fall. An advantage of warm-season
grasses is that they retain their green color into the hot
summer months with little or no watering. They lose their
color in the fall. Warm-season grasses perform best

, such as the wheatgrasses, provide
a green lawn up but will generally turn
brown in the hot summer months, unless
fertilizer is applied. Generally, the cool-season
grasses are more shade tolerant than the warm-season

species.

TYPES OF PLANTINGS

Native prairie grasses in the Northern Great Plains are well
adapted to the environment of this region. Winter
hardiness, drought tolerance, and natural disease and
insect resistance are inherent. Although many species are
broadly adapted, matching the species to the site is
beneficial. Depending on the purpose of the planting,
native grasses can be used in a variety of settings.

There are three main types of prairie landscaping using
native grasses. Combinations of any or all may be used,
depending on the unique purpose of the planting and the
desires and personal interests of the homeowner.

- ◆ **Reduced Maintenance Ground Cover:** One to several
species of native grasses planted to provide maximum
ground cover and minimum maintenance; infrequent or
no mowing; wildflowers may be added; generally the
grass is either warm-season or cool-season species,
not mixed.

- ◆ **Prairie Restoration:** A diverse mix of both warm-season and cool-season grasses and wildflower species; often grass is seeded first, and then wildflowers are transplanted in subsequent years after the weeds have been controlled; management may include burning or annual residue removal; check local zoning ordinances.
- ◆ **Accent Plantings:** Individual plants are generally transplanted from containerized nursery stock; mass type plantings or mixed species; generally individual plants are spaced 1 to 3 feet apart; woodchips, rock, and/or fabric are frequently used between plants to aid in moisture conservation and prevent weed growth; may be mixed with wildflowers.



Western wheatgrass/green needlegrass mixed with wildflowers (Bismarck PMC)

Table 1 provides basic information regarding native grasses used for ground cover planting. Generally, these plantings are established from seed. The same information can, in general, be used for prairie restoration type plantings; although the seeding rates need to be reduced proportionately, depending on the percent of each species desired in the planting.

Table 2 provides information regarding the use of native grasses for landscape accent plantings. These grasses are generally transplanted from containers.

ESTABLISHMENT AND MAINTENANCE

Shallow seeding depth, initial irrigation for germination and root development, and weed control are three critical factors in achieving a successful stand of native grass. Standard procedures should be followed for seeding grass or transplanting containerized plants. Poor soil conditions may require the addition of amendments, such as organic matter. Consult your local experts (see For More Information section) for additional information on soil amendments or fertilizer.

Native grasses are especially sensitive to seeding depth. A key to rapid emergence is to plant the seed no more than 1/2" deep. Some species planted deeper than 1" will not emerge. A smooth, firm seedbed free of dirt clods and other debris will enhance seed germination. Irrigation is recommended for establishment.

Seeding Dates

Cool-season

- early spring (April-May)
- late summer (August)
- dormant (after October 15)

Warm-season

- late spring to early summer (May-June)

Plants transplanted from containers can generally be planted throughout most of the growing season, as their roots are already developed. They need adequate moisture initially to establish as rapidly as possible. Warm-season species should be transplanted before mid-summer to ensure establishment before they go dormant. Once established, many native species can endure long periods of heat and drought.

Weed control can be accomplished with herbicides or by mowing to prevent weeds from going to seed or shading out the new grass seedlings. Herbicide recommendations will depend on factors such as the age of the grass stand (seedling vs. established) and the presence or absence of wildflowers.



Prairie restoration (Bismarck PMC)

After establishment, the maintenance required will depend on factors such as amount of water and fertilizer, plant density, and weed problems.

Prairie grasses generally require limited maintenance once they are established. These grasses mixed with native wildflowers create natural landscapes that provide seasonal displays of color and texture. Enjoy the beauty of your own personal prairie, and add to the floral diversity of your home environment by planting native grasses.

TABLE 1 - NATIVE GRASSES FOR GROUND COVER

						BROADCAST SEEDING RATES FOR PURE STANDS		
SPECIES	VARIETY¹	VEGETATIVE CHARACTERISTICS	SOIL PREFERENCE			<u>Lawns</u>	<u>Large Areas</u>	REMARKS
			Sandy	Loamy	Clayey	lbs. PLS² per 1000 sq.ft.	lbs. PLS per acre	
WARM-SEASON								
blue grama³ (<i>Bouteloua gracilis</i>)	Bad River ecotype (SD)⁴	fine leaf, bunchgrass	X	X	X	1-2	6-8	short grass, mow occasionally; eyebrow shaped seed head
buffalograss³ (<i>Buchloe dactyloides</i>)	Bismarck ecotype (ND) Cody (NE) Tatanka (NE)	fine leaf, spreads by stolons		X	X	3-5 (bur)	30-40	short grass, sod-former, mow occasionally; buy treated seed; Bismarck ecotype is vegetatively propagated
sideoats grama (<i>Bouteloua curtipendula</i>)	Killdeer (ND) Pierre (SD) Butte (NE)	coarser leaves	X	X	X	2-4	20-30	establishes easily, interesting seed head
COOL-SEASON								
western wheatgrass (<i>Pascopyrum smithii</i>)	Rodan (ND) Rosana (MT)	bluish/green leaves, rhizomes, coarser leaves		X	X	3-5	30-40	more open sod than warm-season species
thickspike wheatgrass (<i>Elymus lanceolatus</i>)	Critana (MT) Bannock (ID,OR,WA)	finer leaves than western & more leafy	X	X	X	2-4	20-30	performs well on sandier sites
streambank wheatgrass (<i>Elymus lanceolatus</i>)	Sodar (OR)	finer leaves than western & more leafy	X	X	X	2-4	20-30	name is misnomer, doesn't like moist sites
green needlegrass (<i>Nassella viridula</i>)	Lodorm (ND)	dark green color, coarser leaves		X	X	2-4	20-30	works best as part of mixture with other cool- season species

¹ These varieties were generally developed for conservation use. Certified seed is recommended to guarantee species and varietal purity.

² PLS=Pure Live Seed. This is viable seed of the desired species. Pounds needed to plant = $\frac{\text{pounds PLS specified}}{\% \text{ purity} \times \% \text{ germination}}$

³ Blue grama and buffalograss have complementary vegetative characteristics and perform well as a mixture.

⁴ Indicates origin: the state where the variety was originally collected.

TABLE 2 - NATIVE GRASSES FOR LANDSCAPE ACCENTS

SPECIES	VARIETY	SOIL PREFERENCE			MATURE HEIGHT	REMARKS
		Sandy	Loamy	Clayey		
WARM-SEASON						
big bluestem (<i>Andropogon gerardii</i>)	Bison (ND) Bonilla (SD) Sunnyview (SD)	X	X	X	5-7'	tall, vigorous plant; seed head resembles turkey foot; reddish fall/winter color; bunchgrass
sand bluestem (<i>Andropogon gerardii</i> var. <i>pauciflorum</i>)	Garden (NE) Goldstrike (NE)	X	X		4-6'	same as above but more drought tolerant; bluish color; bunchgrass
switchgrass (<i>Panicum virgatum</i>)	Dacotah (ND) Forestburg (SD) Summer (NE)		X	X	3-5'	seed head is an open panicle; turns golden yellow in fall/winter; spreads by rhizomes; Dacotah is shorter; Summer is more upright
Indiangrass (<i>Sorghastrum nutans</i>)	Tomahawk (ND,SD) Holt (NE)	X	X	X	4-6'	bronze-colored seed head; bunchgrass
prairie sandreed (<i>Calamovilfa longifolia</i>)	Bowman (ND) Goshen (WY)	X	X		4-7'	tall, attractive seed head; golden yellow in fall/winter; spreads by rhizomes; prefers dry sites to avoid leaf spotting
little bluestem (<i>Schizachyrium scoparium</i>)	Badlands ecotype (ND) Camper (NE) Blaze (NE)	X	X	X	2-4'	good drought tolerance; fuzzy, white seed heads at maturity; reddish fall/winter color; bunchgrass
sideoats grama (<i>Bouteloua curtipendula</i>)	Killdeer (ND) Pierre (SD) Butte (NE)	X	X	X	1-2'	interesting seed head, oat-like spikelets hang from one side; brilliant orange anthers; good drought tolerance; Butte is taller
blue grama (<i>Bouteloua gracilis</i>)	Bad River ecotype (SD)	X	X	X	1-2'	eyebrow-shaped seed head; slender stalks; excellent drought tolerance, bunchgrass
prairie cordgrass (<i>Spartina pectinata</i>)	Red River ecotype (ND,SD,MN)		X	X	5-7'	prefers wetter sites; tall, robust plant; spreads aggressively by rhizomes
COOL-SEASON						
Canada wildrye (<i>Elymus canadensis</i>)	Mandan (ND)	X	X	X	2-4'	nodding seed head with awns; excellent winter accent plant; bunchgrass
green needlegrass (<i>Nassella viridula</i>)	Lodorm (ND)		X	X	2-4'	black seed with awns; bunchgrass
Indian ricegrass (<i>Oryzopsis hymenoides</i>)	Rimrock (MT)	X	X		1-2'	delicate branching on seedheads; seeds resemble tiny pearls; prefers dry sites



FOR MORE INFORMATION

- ◆ USDA Natural Resources Conservation Service
Plant Materials Centers; Resource Technical Teams;
and Field, Area, and State Offices
- ◆ Land Grant Universities and Cooperative Extension
Services
- ◆ USDI Fish & Wildlife Service
Wildlife Refuges and Regional Offices
- ◆ State Wildlife and Natural Resource Agencies
- ◆ Native Plant Societies
- ◆ The Nature Conservancy
- ◆ Local Greenhouses and Nurseries

REFERENCES AND ADDITIONAL READING

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Cover Photos: Bismarck ecotype buffalograss lawn unmowed and Badlands ecotype little bluestem as winter accent (all Bismarck PMC photos by Dwight Tober); big bluestem and switchgrass accent planting (Dean and Patsy Chamrad)

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